

Key

Unit 3 Quiz Review

Completely factor the following

1. $16x^4 - 1 \rightarrow (4x^2 - 1)(4x^2 + 1) \rightarrow (2x - 1)(2x + 1)(4x^2 + 1)$

2. $25x^2 - 9 \rightarrow (5x - 3)(5x + 3)$

3. $x^3 + 8 \rightarrow (x + 2)(x^2 - 2x + 4)$

4. $27x^3 - y^3 \rightarrow (3x - y)(9x^2 + 3xy + y^2)$

5. $4x^3 - 4x^2 + 3x - 3 \rightarrow (4x^2 + 3)(x - 1)$

6. $16x^3 - 8x^2 - 10x + 5 \rightarrow (8x^2 - 5)(2x - 1)$

7. $5x^2 + 7x - 6 \rightarrow (5x - 3)(x + 2)$

8. $6x^2 + 17x + 12 \rightarrow (3x + 4)(2x + 3)$

Solve by factoring

9. $2x^3 - 16 = 0 \rightarrow 2(x - 2)(x^2 + 2x + 4) = 0$
 $x = 2$

$x = \frac{-2 \pm \sqrt{4 - 4(1)(4)}}{2} = \frac{-2 \pm \sqrt{-12}}{2} = \frac{-2 \pm 2i\sqrt{3}}{2} = -1 \pm i\sqrt{3}$

10. $2x^4 - 13x^2 = -15 \rightarrow (2x^2 - 3)(x^2 + 5) = 0$
 $x = \pm\sqrt{3/2}$ $x = \pm\sqrt{5}$

Divide using long division

15. $(2x^3 + 7x^2 - 6x + 5) \div (2x - 1)$
 $x^2 + 4x - 1 + \frac{4}{2x - 1}$

16. $(x^4 + 2x^3 - x + 5) \div (x - 1)$
 $x^3 + 3x^2 + 3x + 2 + \frac{7}{x - 1}$

17. $(2x^3 + 8x^2 - 3x + 5) \div (x^2 + 2x - 1)$
 $2x + 4$
 $x^2 + 2x - 1 \overline{) 2x^3 + 8x^2 - 3x + 5}$
 $- 2x^3 + 4x^2 + 2x$

 $4x^2 - x + 5$
 $- 4x^2 + 8x + 4$

 $-9x + 9$

$2x + 4 + \frac{-9x + 9}{x^2 + 2x - 1}$